

What is claimed is:

1. A battery polymeric material comprising repeating units, wherein p-phenylene is combined with one type of group selected from the group composed of oxygen, a methylene group, an isopropylidene group, a carbonyl group, a carbonyldioxy group, a carboxylic acid anhydride group, an amide group, an ureylene group, and a sulfonyl group.

2. A battery polymeric material according to claim 1, wherein a group combined with p-phenylene is oxygen or a carbonyl group.

3. A battery polymeric material comprising repeating units, wherein at least two types of p-phenylene which is combined with one type of group selected from the group composed of oxygen, a methylene group, an isopropylidene group, a carbonyl group, a carbonyldioxy group, a carboxylic acid anhydride group, an amide group, an ureylene group, a sulfonyl group, sulfur, and a carbonyloxy group are combined with each other.

4. A battery polymeric material according to claim 3, wherein

the groups combined with p-phenylene are oxygen and a carbonyl group.

5. A battery separator formed by the battery polymeric material according to the claim 1.

6. A battery separator formed by the battery polymeric material according to the claim 3.

7. A battery insulating packing formed by the battery polymeric material according to the claim 1.

8. A battery insulating packing formed by the battery polymeric material according to the claim 3.

9. A lithium battery, wherein
a positive electrode, a negative electrode, a non-aqueous electrolyte, and a battery separator separating said positive electrode and negative electrode are provided in a battery case, and said battery separator is formed by the battery polymeric material according to the claim 1.

10. A lithium battery, wherein
a positive electrode, a negative electrode, a non-aqueous electrolyte, and a battery separator separating said positive electrode and negative electrode are provided in a battery case, and said battery separator is formed by the battery polymeric material according to the claim 3.

11. A lithium battery, wherein
a positive electrode, a negative electrode, a non-aqueous electrolyte, and a battery separator separating said

positive electrode and negative electrode are provided in a battery case, and a battery insulating packing sealing said battery case is formed by the battery polymeric material according to the claim 1.

12. A lithium battery, wherein

a positive electrode, a negative electrode, a non-aqueous electrolyte, and a battery separator separating said positive electrode and the negative electrode are provided in a battery case, and a battery insulating packing sealing said battery case is formed by the battery polymeric material according to the claim 3.

13. A lithium battery, wherein

a positive electrode, a negative electrode, a non-aqueous electrolyte, and a battery separator separating said positive electrode and the negative electrode are provided in a battery case, and said battery separator is formed by the battery polymeric material according to the claim 1 and is automatically soft-soldering in a reflowing furnace.

14. A lithium battery, wherein

a positive electrode, a negative electrode, a non-aqueous electrolyte, and a battery separator separating said positive electrode and the negative electrode are provided in a battery case, and said battery separator is formed by the battery polymeric material according to the

claim 3 and is automatically soft-soldering in a reflowing furnace.

15. A lithium battery, wherein

a positive electrode, a negative electrode, a non-aqueous electrolyte, and a battery separator separating said positive electrode and negative electrode are provided in a battery case, and a battery insulating packing sealing said battery case is formed by the battery polymeric material according to the claim 1 and is automatically soft-soldering in a reflowing furnace.

16. A lithium battery, wherein

a positive electrode, a negative electrode, a non-aqueous electrolyte, and a battery separator separating said positive electrode and negative electrode are provided in a battery case, and a battery insulating packing sealing the battery case is formed by the battery polymeric material according to the claim 3 and is automatically soft-soldering in a reflowing furnace.